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By-Emmer, Edmund T.

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To determine whether increased teacher use of student ideas would produce increased verbal initiation, an experiment was conducted with 16 second grade teachers and their classes. First, a series of observations were made under normal class conditions to determine the usual percentages of teacher use of student ideas and student initiation. Then, during a 20- to 25-minute time period, each teacher attempted to elicit student initiation on 2 topics selected by the experimenter. Finally, each teacher again attempted to elicit student initiation on 2 more topics. Each teacher and her class was observed using Flanders' Interaction Analysis categories to code teacher and student behavior, and a statistical analysis was made of the results. It was concluded that those teachers who increased their use of student ideas increased student initiation, whereas teachers who did not increase their use of student ideas did not obtain more student initiation. (A 6-item bibliography and a list of categories for interaction analysis are included.) (SG)

The Effect of Teacher Use of Student Ideas on Student Initiation[1]

Edmund T. Emmer

Department of Educational Psychology and

R & D Center for Teacher Education

The University of Texas

Austin, Texas

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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This study was an attempt to determine whether <u>increased teacher use of student ideas would produce increased student verbal initiation</u>. Other studies (e.g., Ryans, 1960; Cogan, 1958a, 1958b) had indicated a positive relationship between student initiation and dimensions of teacher behavior related to teacher use of student ideas, but the extent to which teachers could actually effect a change in student initiation was not evident. One study (Flanders, 1965) produced data showing no relationship between the variables under study.

<u>PROCEDURE</u>: In order to test the hypothesis that increased teacher use of student ideas produces increased student initiation, an experiment was conducted with 16 second grade teachers and their classes. All teachers were women, the range of teaching experience was from one to 22 years, with a median of 6; participation was voluntary. Each teacher and her class was observed using Flanders' Interaction Analysis categories to code teacher and student behavior (see Appendix A for a list of the categories

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[1] Presented at the annual meeting of the American Educational Research Association; Chicago, 1968.

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and their definitions). The variables: teacher use of student ideas and student verbal initiation are two of the categories in this system. These initial periods of observation (hereafter referred to as Baseline Periods) generally comprised five half-days over a two week period, and were used to determine the usual amounts of teacher use of student ideas and student initiation in these classes. The percentage of teacher talk that was coded as use of student ideas and the percentage of total class time that was coded as student initiation are the units of analysis appearing in the tables accompanying this paper. Eleven inter-observer reliability checks (i.e., a comparison of the category percentages of two persons doing simultaneous observation) conducted during the Baseline Periods produced a median Scott pi coefficient of .88 (see Scott, 1955).

There were two subsequent periods of observation (called Periods One and Two) about one week apart, of about 45 minutes each. The experimenter met with each teacher prior to these periods to describe and give examples of student initiation and to explain the purpose of the experiment during Periods One and Two: the teacher was to attempt to elicit increased student initiation from her class. In order to control subject matter during Periods One and Two, each teacher taught the same topics when attempting to elicit student initiation. Periods One and Two each consisted of the presentation of two topics, for a total of four topics altogether. The four topics were, (1) What would happen if water came to the desert (Desert), (2) What makes plants grow (Plants); topics (3) and (4) were vocabulary lists from which the teachers could select words to teach their classes. The teacher was asked to spend about 20 to 25 minutes on each topic. The presentation of the topics was arranged so that each

Period would consist of one of the Vocabulary and one of either the Desert or Plants topics. The sequences of presentation were then randomly assigned to the teachers. A second observer, whose function was to code the response and initiation of individual students, was generally present during Periods One and Two. This observer provided an independent estimate of the amount of student initiation; the product-moment correlation of the two observers' records of the percentage of student initiation during 28 simultaneous observations was .90.

The procedure may be summarized as follows:

Baseline Periods: a series of observations were made under normal classroom conditions, and used to determine the usual percentages of teacher use of student ideas and student initiation.

Period One: each teacher attempted to elicit increased student initiation on two topics selected by the experimenter.

Period Two: each teacher again attempted to elicit increased student initiation, this time on the other two topics[2].

ANALYSIS AND RESULTS:

Comparison of Baseline and Period One

All 16 teachers increased their use of student ideas during Period One as compared to the Baseline Periods. Table 1 shows the means and S.D.'s of the change in teacher use of student ideas; the data have been placed into

[2]Prior to Period Two, 12 of the teachers received feedback about their classroom interaction and were asked to attempt to elicit student initiation specifically by using student ideas. There was no subsequent difference between these teachers and those who did not receive this feedback.

four groups of 4 teachers each, according to the increase in the independent variable.

Insert Table 1 and Figure 1

Table 1 and Figure 1 also show the amounts of student initiation in the Baseline Periods and Period One. As can be seen, there was an increase in student initiation; this was significant at the .01 level. However, the correlation between increases in the two variables for the 16 classes was .16, which is not significant, and it can be readily seen in Figure 1 that relatively large increases in teacher use of student ideas had about the same effect as relatively small increases.

Comparison of Baseline and Period Two

When the Baseline Periods and Period Two were compared, all teachers again increased their use of student ideas. Likewise, student initiation increased significantly ($p < .01$). Table 2 presents means and S.D.'s for this comparison and Figure 2 shows the percentages of student initiation during the Baseline observations and Period Two. In this comparison, there was a positive relationship between increases in the independent and dependent variables ($r = .59$, $p < .01$) for the 16 classes.

Insert Table 2 and Figure 2

Although the above comparisons support the conclusion that the increased teacher use of student ideas produced increased student initiation, neither give conclusive evidence. For one thing, the subject matter effect was not controlled in the comparisons, since the teachers taught the same topics only during Periods One and Two, but not during the Baseline Periods.

Thus, the new topics themselves could have accounted for the increases in student initiation. Also, a Hawthorne effect, the product of some change - any change - from the usual class routine or teacher behavior might have produced the effect.

A comparison between Period One and Period Two however, has the subject matter effect controlled, since each teacher presented the same topics during the Periods. Also, a number of the teachers actually used student ideas less, or did not change, during Period Two, as compared to Period One. Thus, for these teachers, an increase in student initiation would not be predicted unless, of course, a Hawthorne effect, or some variable other than teacher use of student ideas was the cause of the increased student initiation obtained during the first 2 comparisons.

Comparison of Period One and Period Two

Nine teachers increased their use of student ideas in Period Two, as compared to Period One; seven teachers did not increase their use of student ideas. Those nine teachers elicited a greater increase in student initiation in Period Two than those teachers who did not increase their use of student ideas. Summary data for this comparison can be seen in Tables 3 and 4.

Insert Table 3 and Table 4

Figure 3 shows the profile of student initiation in Periods One and Two. For illustration the No Increase group has been split into two groups: four teachers who decreased their use of student ideas in Period Two (Decrease Group) and three teachers who did not change (Stable Group).

Insert Figure 3

These results provide strong evidence in support of the hypothesis. The topic[3] variable was controlled and a Hawthorne effect appears ruled out. Teachers who increased their use of student ideas elicited an increase in student initiation; where there was no increase in the independent variables, student initiation did not increase.

One further piece of evidence comes from examining other teacher behaviors, since it is possible that another type of behavior, increasing concommitantly with teacher use of student ideas, was responsible, in whole or in part, for the increased student initiation. The most likely candidate among the other behaviors recorded in Flanders' Interaction Analysis is Praise and Encouragement. However, analyses indicated that increased student initiation was no more probable when the teacher praised more than when she praised less. Similar results were obtained for teacher questions. Table 5 and Figures 4 and 5 show the summary data for teacher praise.

Insert Table 5 and Figures 4 & 5

On the basis of these results the hypothesis that increased teacher use of student ideas produces increased student initiation was accepted. Several limitations should be noted however. First, there is still the possibility that some other unobserved variable, varying concommitantly with teacher use of student ideas, may have been responsible for the changes in student initiation. Also, the category called use or acceptance of a student's idea is in fact made up of a number of behaviors: clarification,

[3]In fact, an analysis comparing the amount of student initiation elicited during the presentation of the different topics (Vocabulary vs. "Desert" and "Plants") surprisingly produced no significant difference between the topics.

expansion, comparison, and asking a question based upon a students' idea are all coded into the category. It may be that certain of the behaviors are more effective eliciters of student initiation than others, or that certain students are more responsive to one than to others, in different instructional settings.

SUMMARY: Teachers in sixteen second grade classes attempted to increase verbal initiation from their students. Those teachers who increased their use of student ideas elicited increased student initiation, whereas teachers who did not increase their use of student ideas did not obtain more student initiation.

APPENDIX A.

CATEGORIES FOR INTERACTION ANALYSIS[a]

Teacher Talk Categories	1.	ACCEPTS FEELING: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings are included.
	2.	PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, not at the expense of another individual, nodding head or saying, "um hm?" or "go on" are included.
	3.	ACCEPTS OR USES IDEAS OF STUDENT: clarifying, building, or developing ideas suggested by a student. As a teacher brings more of his own ideas into play, shift to category five.
	4.	ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.
	5.	LECTURING: giving facts or opinions about content or procedure; expressing his own ideas, asking rhetorical questions.
	6.	GIVING DIRECTIONS: directions, commands, or orders to which a student is expected to comply.
	7.	CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.
Student Talk Categories	8.	STUDENT TALK--RESPONSE: a student makes a predictable response to teacher. Teacher initiates the contact or solicits student statement and sets limits to what the student says.
	9.	STUDENT TALK--INITIATION: talk by students which they initiate. Unpredictable statements in response to teacher. Shift from 8 to 9 as student introduces own ideas.
	10.	SILENCE OR CONFUSION: pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

[a]This table was adapted from Flanders, 1966.

Table 1

MEANS AND STANDARD DEVIATIONS OF STUDENT INITIATION AND INCREASES IN USE OF STUDENT IDEAS: BASELINE AND PERIOD ONE

Group	n	Use of Student Ideas Increase from Baseline to Period One		Student Initiation			
				Baseline		Period One	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
A	4	20.2	3.15	7.4	1.27	16.5	4.52
B	4	13.4	1.65	10.5	2.09	24.0	9.13
C	4	9.3	.83	6.3	2.52	12.7	3.51
D	4	5.0	2.37	7.5	3.57	16.9	5.48

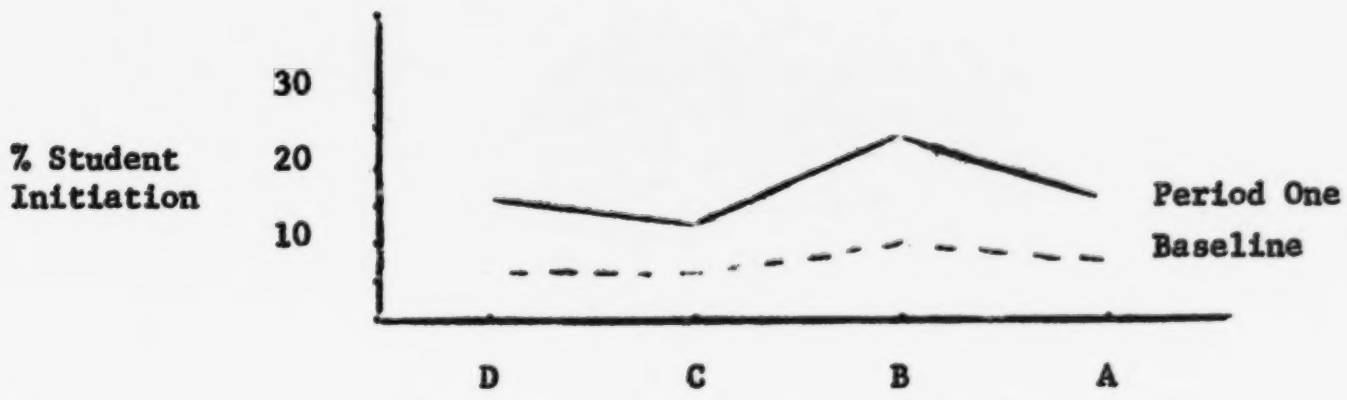

Figure 1 -- Mean Student Initiation During Baseline and Period One, By Increases in Teacher Use of Student Ideas.

Table 2

MEANS AND STANDARD DEVIATIONS OF STUDENT INITIATION AND INCREASES IN USE OF STUDENT IDEAS: BASELINE AND PERIOD TWO

Group	n	Increase in Use of Student Ideas		Student Initiation			
				Baseline		Period Two	
		Mean	S.D.	Mean	S.D.	Mean	S.D.
A	4	25.5	1.76	6.45	2.74	28.6	2.34
B	4	19.35	3.39	7.33	2.14	27.5	4.06
C	4	11.35	.53	8.7	3.04	14.9	8.87
D	4	6.7	3.4	9.13	2.95	19.9	4.38

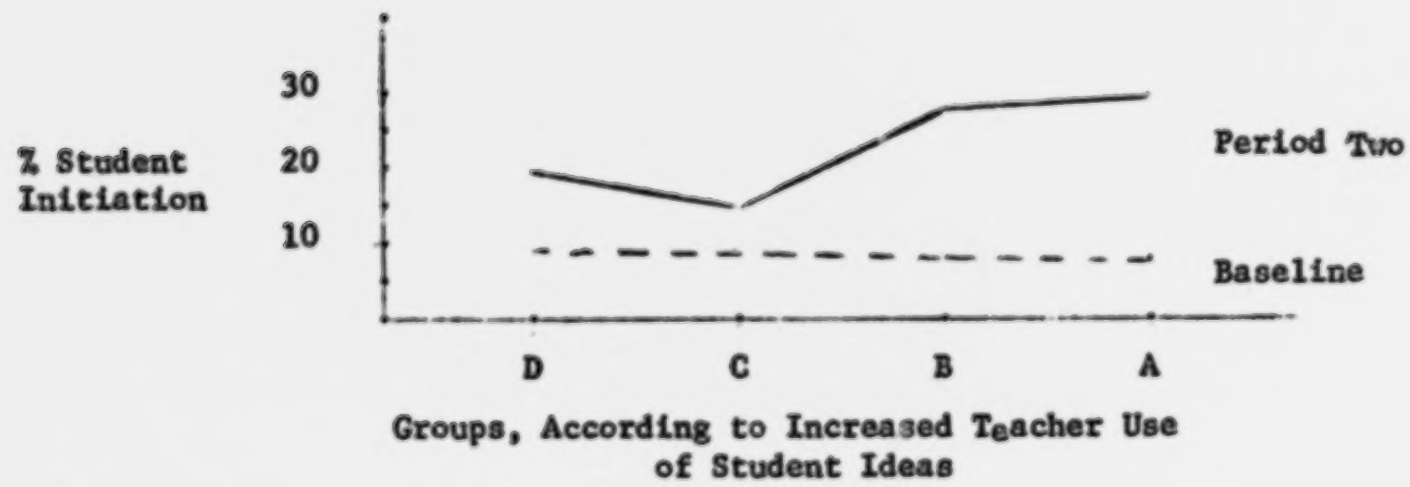

Figure 2 -- Mean Student Initiation During Baseline and Period Two, By Increase in Teacher Use of Student Ideas.

Table 3

MEANS AND STANDARD DEVIATIONS OF STUDENT INITIATION AND CHANGES IN USE OF STUDENT IDEAS: PERIOD ONE AND PERIOD TWO

Group	n	Change in Use of Student Ideas		Student Initiation					
				Period One		Period Two		Change	
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Increase	9	10.5	6.13	18.5	7.43	27.6	3.40	9.1	7.01
No Increase	7	-4.9	5.18	16.2	6.88	16.5	7.39	.3	4.44

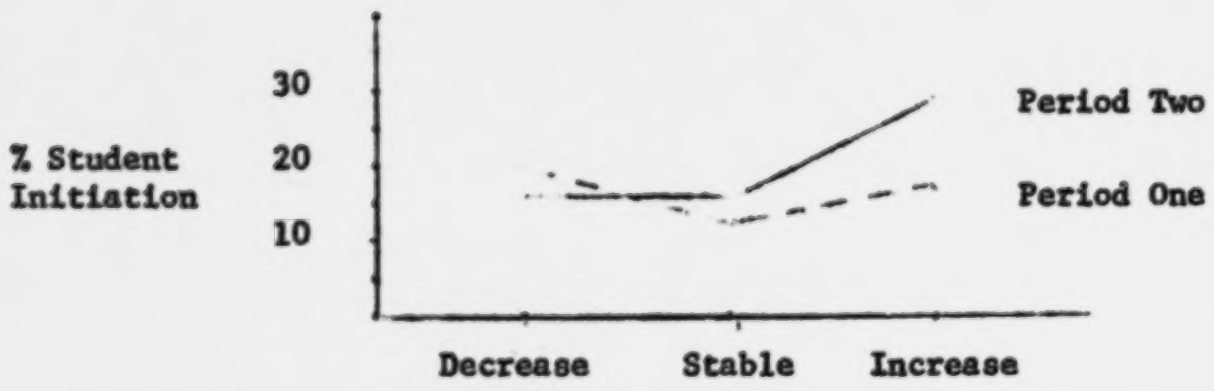

Figure 3 -- Mean Student Initiation During Period One and Period Two, According to Change in Use of Student Ideas.

Table 4

ANALYSIS OF VARIANCE OF CHANGES IN STUDENT INITIATION FROM PERIOD ONE TO PERIOD TWO

Source of Variation	SS	d.f.	MS	F	p
Between Groups (Increase vs. No Increase)	303.8	1	303.8	7.33	.05
Error	580.2	14	41.4		
Total	884.0	15			

Table 5

MEANS AND STANDARD DEVIATIONS OF CHANGES IN PRAISE AND IN STUDENT INITIATION: BASELINE TO PERIODS ONE AND TWO; AND PERIOD ONE TO PERIOD TWO

	Groups	n	Change in Praise		Change in Initiation	
			Mean	S.D.	Mean	S.D.
Baseline to	A	4	-1.5	.19	13.9	5.19
Periods	B	4	- .2	.33	15.7	4.56
One and Two	C	4	.7	.35	1.9	.47
	D	4	4.5	2.30	17.6	6.08
Period One	A	4	-3.1	1.54	9.7	4.37
to	B	4	- .6	.24	3.2	9.64
Period Two	C	4	.7	.27	.4	7.20
	D	4	3.0	1.91	7.6	1.93

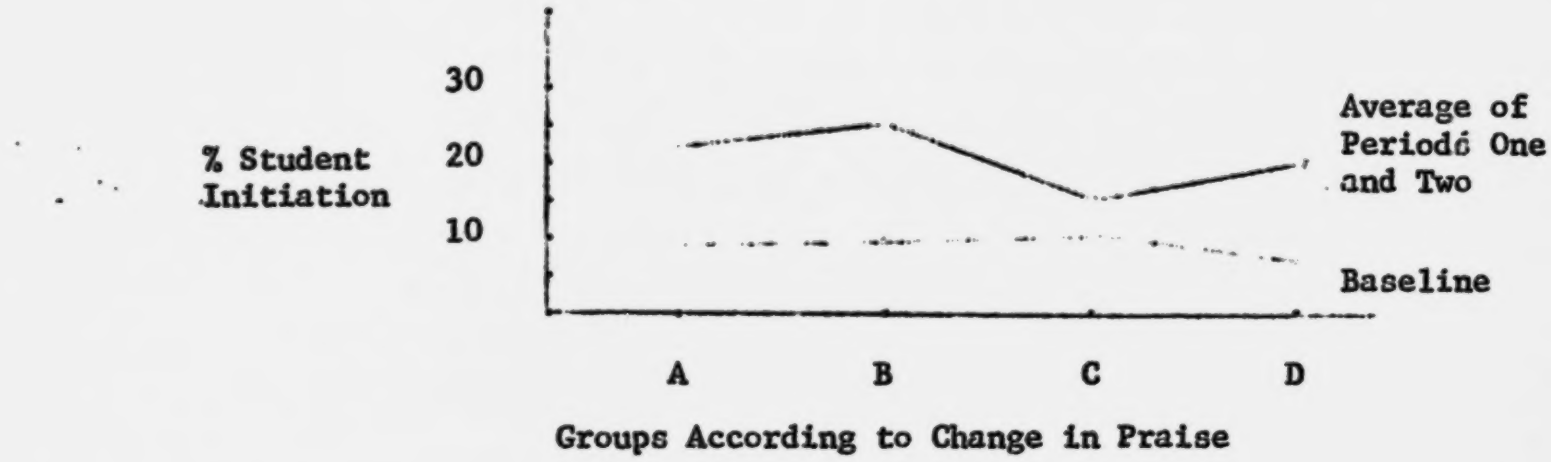

Figure 4 -- Student Initiation During Baseline and Periods One and Two, According to Change in Praise.

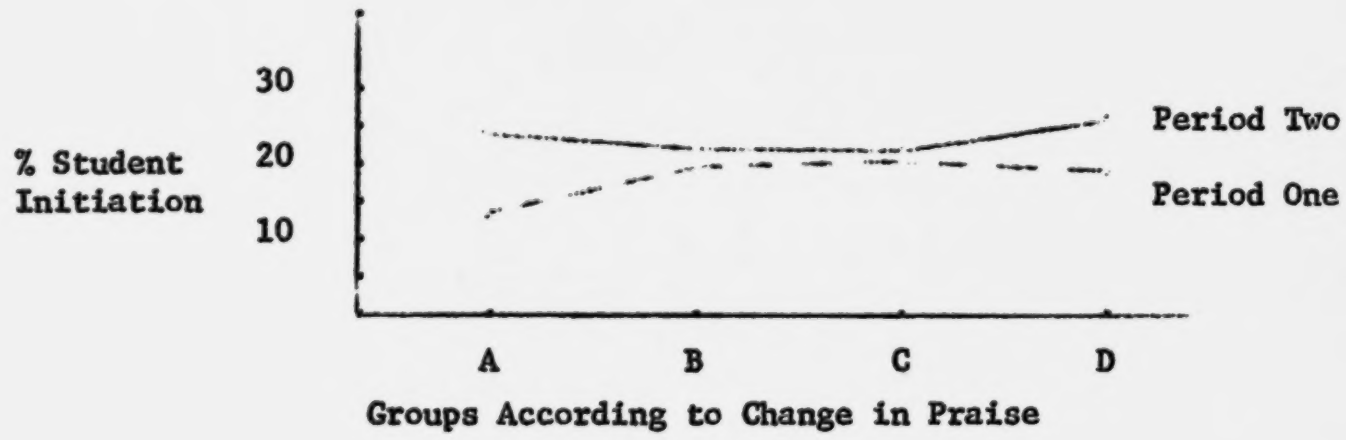

Figure 5 -- Student Initiation During Periods One and Two, According to Change in Praise.

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